

ABSTRACT

An FIR-based apparatus performs fast convolution in the frequency domain for generating room reverberation. The impulse response of a room is segmented and transformed by FFT to form a plurality of segmented room frequency spectra. The input signal to the room is also segmented and transformed to form segmented input frequency spectra. Either overlap-and-add method or overlap-and-save method is applied in the apparatus to accomplish the fast convolution based on the multiplication of segmented input frequency spectrum and segmented room frequency spectrum. To further reduce the complexity of the convolution, a segmented room frequency spectrum is processed to remove high frequency components before being used in the fast convolution according to a perceptual criterion.